

Protect the Force

by Major Michael S. Jacobs and Captain Robert H. Risberg

*Using the versatile Firefinder radars
As a combat multiplier
In the offense and defense*

If you have ever trained at one of the Combat Training Centers (CTC) and had your task force's scheme of maneuver interrupted by the devastating effects of OPFOR artillery, you are not alone. The best laid plans cannot succeed if you lose half of your combat power to the enemy's artillery before you even reach the objective. How do you prevent this? How do you protect the force so that it survives to execute your scheme of maneuver?

There is a tool available to the combined arms commander that can help him protect the force from the enemy's artillery. This tool is not a new technology or a new system just coming off the drawing board. This tool is already in our inventory and is found in every division in our army. This tool, the Firefinder radar, can find the enemy's artillery and mortars, respond to the commanders priorities for force protection, and send counterbattery fires missions directly to a friendly firing unit for execution.

Organization

The Firefinder Radar System consists of the AN/TPQ-37 (Q37) and the AN/TPQ-36 (Q36). These radars are organic assets of every Army division. Heavy divisions have a Target Acquisition Battery (TAB) with two Q37s and three Q36s. Light divisions have a Target Acquisition Detachment (TAD) with two Q37s and have one Q36 organic to each of the division's three direct support (DS) artillery battalions.

The Q37 is a large radar system mounted on three 5-ton trucks. It detects artillery, mortars, and rockets out to a range of 50 kilometers. This radar usually works under the control of the Division Artillery (DIVARTY) commander and concentrates on supporting the division's counterbattery effort.

The Q36 radar is a small radar system currently mounted on two M998s. It detects artillery and mortars to a range of 24 kilometers. This radar usually works under the control of one of the division's DS artillery battalions and concentrates on supporting the maneuver brigade's counterfire effort. This means that the Q36 radar is another asset the maneuver brigade commander has available to help him to protect the force.

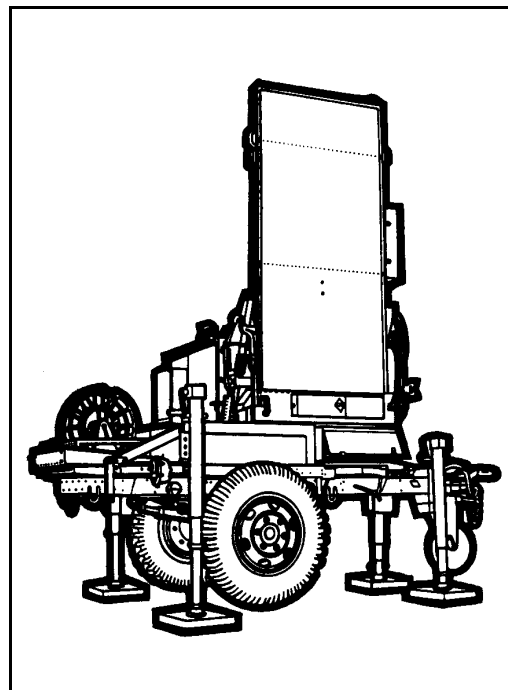
Firefinders Protect the Force

Counterbattery fires can protect the force by silencing enemy guns before their fires can have a significant effect on our friendly maneuver forces. The Firefinder radar's role in this effort is one of *detection*. Firefinder radars detect enemy guns by using radar energy to acquire indirect fires while they are in flight. The radars "see" the projectiles in the air and, through the use of their on-board computer, determine where the round is coming from (target location) and where the round will impact (impact location).

Firefinder's accuracy is good enough to allow friendly forces to shoot back at the enemy's guns and kill them on the first try. Not only is the Firefinder radar accurate, it also "sees" almost everything that penetrates its range fan, including indirect fires, planes, birds, and direct fires. On the plus side, this means that, if your radar is looking in the right direction, it will almost always acquire the enemy fires. On the negative side, this means that the radar acquires an awful lot of stuff flying through the air and can quickly overload the counterfire reporting channels. The radar's computer does screen out anything not acting like indirect fires

(birds, direct fires, planes etc.), but still reports a very large number of acquisitions. The way the commander screens out everything but what is important to him is through the use of radar zones. Radar zones are the tools the commander uses to prioritize portions of the battlefield that, if influenced by indirect fires, may inhibit the scheme of maneuver. Since the radar acquires all indirect fires within the search fan, a zone tells the radar that any rounds coming from or going to the area covered by the zone are important and reported first. This is key because there are areas on the battlefield that are more important to the commander than others.

Firefinder radars prioritize the battlefield through the use of four zones. Critical Friendly Zones (CFZ), Call For Fire Zones (CFFZ), Artillery Target Intelligence Zones (ATI), and Censor Zones (CZ). Each zone gives the counterfire processing cell different information. CFFZs and ATIs are used mainly by the DIVARTY counterfire planners for the division's counterbattery effort. CZs protect friendly indirect



FIREFINDER SURVIVABILITY MATRIX

RADAR	SCREENING CREST	TUNNELING	EW THREAT (AIRBORNE THREAT NOT COVERED)	RADAR POSITION HAS SCREENING CREST AND TUNNELING	RADAR POSITION HAS SCREENING CREST ONLY	RADAR POSITION HAS NEITHER SCREENING CREST NOR TUNNELING
WEAPONS-LOCATING RADAR AN/TPQ-36	<ul style="list-style-type: none"> •WITHIN 1,000 METERS OF RADAR POSITION •IN FRIENDLY TERRITORY •FROM 15 TO 30 MILS <p>ENEMY CANNOT ACHIEVE ELECTRONIC LINE OF SIGHT WITH HIS DIRECTION-FINDING SYSTEMS</p>	USE OF FOLIAGE, BERM, OR BUILDINGS TO REDUCE SIDE-LOBE RADIATION	GROUND EW THREAT REVIEW WITH S2 CURRENT EW THREAT TO FIREFINDER	ACCUMULATE 15 OR MORE MINUTES OF RADIATION —but—	ACCUMULATE 8 OR MORE MINUTES OF RADIATION —but—	RADIATE 8 MINUTES MINUS MARCH-ORDER TIME OR 2 MINUTES, WHICHEVER IS GREATER; MAKE SURVIVABILITY MOVE —but—
			NONE	DO NOT EXCEED 2 MINUTES OF CONTINUOUS RADIATION •NO EW TIME LIMIT •RADIATE AS MISSION REQUIRES •MONITOR EW SITUATION		
WEAPONS-LOCATING RADAR AN/TPQ-37	<ul style="list-style-type: none"> •WITHIN 1,000 METERS OF RADAR POSITION •IN FRIENDLY TERRITORY •FROM 5 TO 15 MILS <p>ENEMY CANNOT ACHIEVE ELECTRONIC LINE OF SIGHT WITH HIS DIRECTION-FINDING SYSTEMS</p>		GROUND EW THREAT REVIEW WITH S2 CURRENT EW THREAT TO FIREFINDER	ACCUMULATE 15 OR MORE MINUTES OF RADIATION —but—	ACCUMULATE 8 OR MORE MINUTES OF RADIATION —but—	RADIATE 8 MINUTES MINUS MARCH-ORDER TIME OR 2 MINUTES, WHICHEVER IS GREATER; MAKE SURVIVABILITY MOVE —but—
				DO NOT EXCEED 2 MINUTES OF CONTINUOUS RADIATION		

fire assets from being reported as acquisitions by friendly radars. The zone that is most important to the combined arms commander, from CO/TM through brigade, is the CFZ.

CFZ Definition

According to FM 6-121, *Tactics, Techniques, and Procedures for Artillery Target Acquisition*, a CFZ “is an area, usually a friendly unit or location, that the maneuver commander designates as critical. It is used to protect an asset whose loss would seriously jeopardize the mission.” In other words, a CFZ is an area around somewhere, someone, or something the commander thinks is critical to his operation and must be protected from enemy indirect fires. When a radar predicts that a round is going to impact inside a CFZ, the location of the weapon firing into the CFZ is immediately designated as a priority one acquisition and a digital call for fire is transmitted to the coun-

terfire controlling headquarters or directly to a friendly firing unit. This in turn is immediately sent down to a fire unit for processing and execution. The effect is responsive counterbattery fires for the brigade.

Radar Technical Considerations

It is necessary to discuss some of the technical considerations of the system before we discuss some employment techniques.

The Firefinder radar only acquires targets when it is radiating, or cueing. Two methods exist for ensuring the radar is cueing at the appropriate time: command and scheduled cueing.

One key tactical consideration of the radar is that the survivability flow chart in FM 6-121 clearly states that the radar should not cue for more than 15 minutes total or 2 minutes continuous from any given position. Because of this, the two methods of cueing were developed.

With command cueing, the radar cues only when indirect fires are impacting on the scheme of maneuver. This limits the time the radar cues, therefore potentially minimizing the number of required moves. A common trend at the CTCs is that this method does work, but that timeliness is a factor. First, a net must be established that the fire supporters can monitor, generally the TF command net, and everyone must know that this is priority traffic.

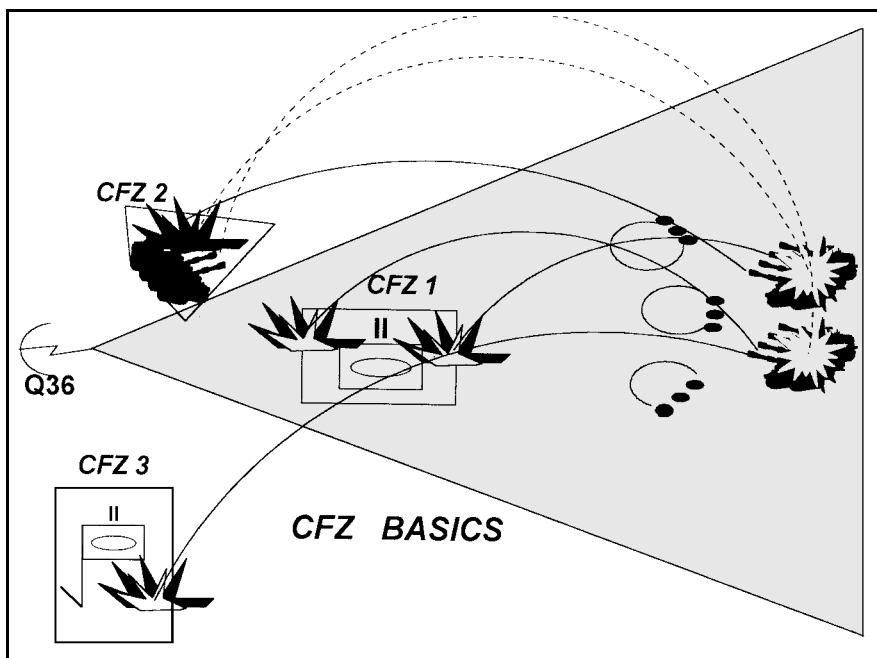
Scheduled cueing is when a radar cues at specific times for a specific period of time. Use scheduled cueing when you anticipate the beginning of preparatory fires in your area or when, during the heat of the battle, the total number of acquisitions are simply too many to process. An example of a cueing schedule is 20 seconds on and 2 minutes off, continually repeated until told to discontinue.

CFZ Tactics

CFZs can be a valuable tool for the combined arms commander, but CFZs are not an unlimited radar capability, and must therefore be prioritized. A Firefinder radar can only hold nine total zones in its computer (any combination of the four mentioned earlier) at any given time. This means the commander must use them judiciously throughout the brigade sector. The brigade commander may allocate zones to his task forces for planning, but all of these zones cannot be in effect at the same time.

Though a restriction, this does not stop you from planning CFZs throughout your entire scheme of maneuver.

Plan CFZs in a similar fashion as targets, top-down. The direct support artillery battalion commander, as the brigade's fire support coordinator (FSCO-ORD), and the brigade fire support officer (FSO) know how the brigade commander wants to fight the battle and should plan CFZs on those critical areas where enemy indirect fires may influence his fight. And as in top-down



fire planning, allocate a number of zones to each task force for planning. Task force commanders and their FSOs plan the zones to support their scheme of maneuver. The brigade FSO then looks at what the task forces want, resolves any conflicts and or duplications, prioritizes the zones for the entire brigade, and finally issues the brigade zone plan to all fire supporters within the brigade (including the COLTS), the counterfire headquarters, the DS battalion, and the radars.

Another of the great things about a CFZ is that it does not have to be within the radar's search fan. This capability allows for any unit behind the radar, such as TOCs and trains, to have full coverage.

A technique used very effectively at the CTCs is battle tracking with CFZs. As the battle progresses and the FLOT moves forward, delete CFZs that do not have any purpose and implement ones that will. In a fluid battlefield, this must occur if zones are to be used effectively.

Offensive Techniques

In the offense, plan CFZs to protect the force throughout the scheme of maneuver. Published doctrine emphasizes using CFZs for the protection of command posts, combat trains locations, passage lanes, and scouts.

These assets are fine if they are the most critical to the operation and the

commander prioritizes them. Consider two areas in an offensive operation where CFZs may be more useful: breach sites and support and attack by fire positions.

The OPFOR at the CTCs do a great job of keeping obstacles covered by forward observers. The observers have simple instructions — if a unit attempts to breach the obstacle, call for indirect fires. It is common at the CTCs to see a task force lose 50 percent of its combat power at an obstacle to indirect fires. Because a breach site is such a critical area on the battlefield for the commander, establish a CFZ around the area where the breach will occur. By doing this, you've prioritized this area on the battlefield and any indirect fires, lethal or non-lethal, will be prioritized for counterbattery execution. Plan CFZs on obstacles you plan to breach as well as establish CFZs on obstacles that you were not aware of, but must breach.

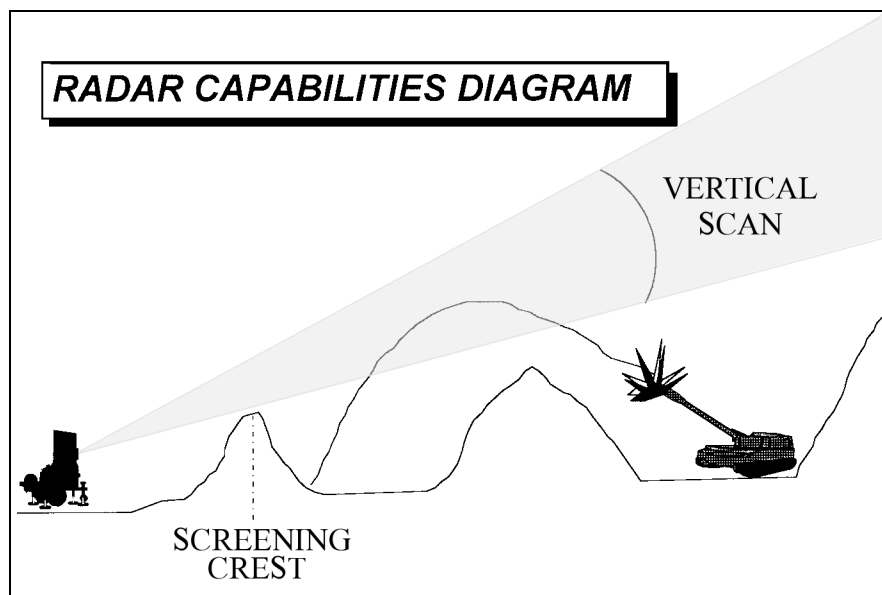
The next critical area on the battlefield that is commonly not considered for a CFZ, but may greatly influence the outcome of a battle, is the support or assault by fire position (SBF or ABF).

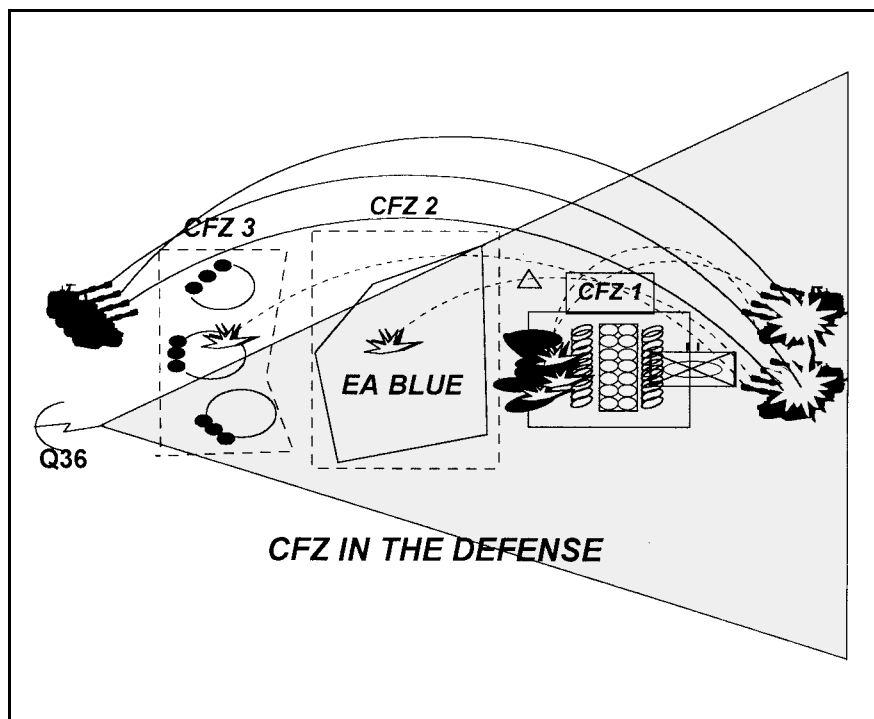
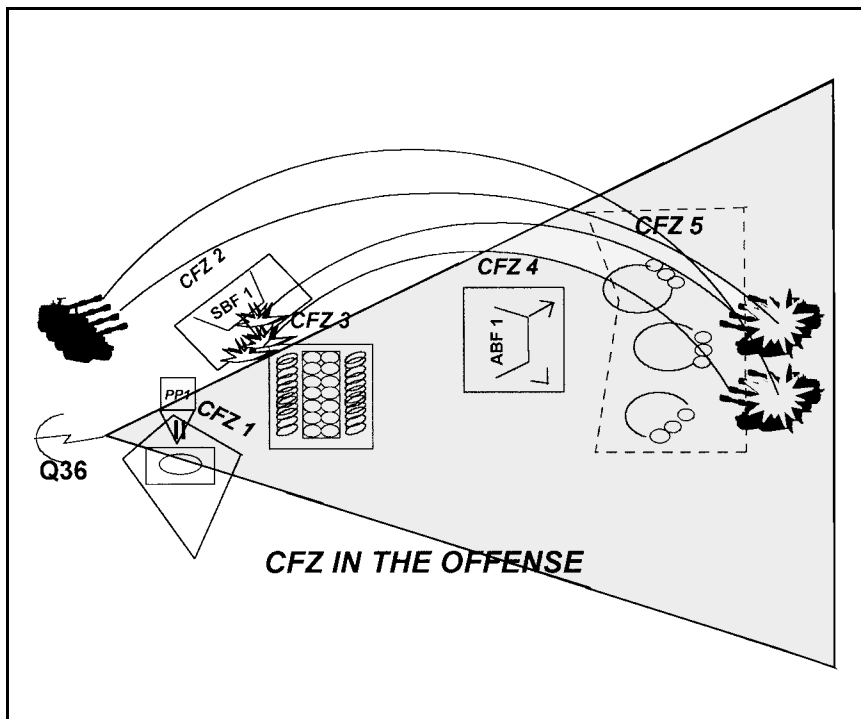
If the supporting or assaulting force cannot effectively direct its fires because of enemy indirect fires, synchronization is not achieved. A CFZ around the SBF or ABF position can keep enemy indirect fires from interfering with the supporting/assaulting force's mission.

In both of these examples, we have prioritized, through the use of a CFZ, the counterfire fight for the counterfire headquarters. We have told them, with the nomination of these zones, that if these areas become saturated with indirect fires, it will affect the accomplishment of the mission. Therefore, the firing units affecting these areas, regardless of the type of munition being fired, will be addressed first.

Movement to Contact/Meeting Engagement Techniques

In a movement to contact/meeting engagement, the area most likely to receive enemy indirect fires first is where the combat reconnaissance patrol (CRP) meets our scouts or the forward security element (FSE) makes contact with our lead company/team (CO/TM). In either case, establishing a CFZ around our forces, protects them from





the effects of indirect fire and allows direct fire engagements to take place with greater effect. The other area most likely to receive influential indirect fires is where the task force commander sets a CO/TM in order to fix the enemy main body. Here we establish CFZs to protect our fixing force

and again allow for more effective engagements and maneuver.

Defense

In the defense, the areas that warrant protection from indirect fires are friendly

obstacles, engagement areas (EA), and the areas forward and on the battle position (BP).

When an attacking enemy force runs into our obstacles, he does the same thing we do — he either maneuvers around it or begins to breach. If he breaches, he uses indirect fires on the far end of the obstacle (our side), to screen his forces and he suppresses or neutralizes the friendly forces overwatching the obstacle. A CFZ planned around our force overwatching the obstacle, and around the area the enemy would place screening fires, allows us to quickly silence his guns delivering the fires and deprive his breaching force of those obscuration fires. If we deny him covering fires, he is extremely vulnerable to our direct and indirect fires.

A proven technique is establishing a CFZ on the battle positions surrounding the EA. When he finds himself in our EA, he will focus his indirect fire on our direct fire systems. With the CFZ in place, these units become priority for counter fires.

Rehearsals

Any plan or operation has a better chance of success if it is thoroughly rehearsed, and this is also true of the counterfire/counterbattery plan.

The technique of battle tracking with zones is a prime example. As we discussed earlier, the radar computer holds nine total zones. Because of this limitation, we must decisively activate and deactivate zones as the operation proceeds. The radar crew and the counterfire headquarters must be a key component of a rehearsal, arguably both the combined arms rehearsal and the fire support rehearsal. During the rehearsal, exercise the system for getting the right zones in effect in the right places at the right times. The rehearsal is the key to integrating **ALL** parts of the plan.

Conclusion

The Firefinder radar is an asset available to the combined arms commander to assist him in protecting his forces. It *cannot* protect *all* his forces *all* the time from indirect fires. If properly employed, it *can* greatly reduce the enemy's ability to effectively use indirect fires against us. Commanders at all levels must understand the capabilities of

the Firefinder radar and, more importantly, include it in your guidance to your Fire Supporter.

Please note that these are not the only techniques of establishing CFZs throughout the battlefield. But the bottom line is that Firefinder radar can help us protect the force and keep soldiers alive on the battlefield.

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